

Assessment of Medicolegal Significance of Human Skeletal Remains

1 Scope

This document describes guidelines for assessing whether human skeletal material is of medicolegal significance by Anthropology Examiners within the Trace Evidence Unit (TEU).

2 Equipment/Materials/Reagents

- Sliding calipers capable of measuring items up to 200mm within +/- 0.5mm (Mitutoyo Digimatic Absolute Digital Calipers 500-172-20 CD-8" CX or equivalent)
- Spreading calipers capable of measuring items up to 300mm within +/- 0.5mm (Paleo-Tech Digital Linear Spreading Calipers with Mitutoyo Digimatic Absolute Digital Scale 572-213-10 or equivalent)
- Osteometric board (Paleo-Tech Field Osteometric Board, or equivalent)
- Mandibulometer (Paleo-Tech Mandibulometer or equivalent) 3-dimensional digitizer (MicroScribe G2 LX or equivalent)
- Tape measure
- FORDISC 3.0 or more recent version
- Personal protective equipment (lab coat, gloves, eye protection, or better, as needed)
- Digital radiography unit (NorthStar X-5000 x-radiography unit, Kubtec radiography unit, or equivalent)
- Human skeletal reference casts (e.g., complete skeletal reference case, age determination casts)
- Stereobinocular microscope, magnification range from 0.5x to at least 40x
- Reversible adhesive (Paraloid B-72 or equivalent)
- Permanent adhesive (cyanoacrylate or equivalent)
- Digital camera (Nikon D70, or equivalent)

3 Standards and Controls

Not applicable.

4 Sampling

Not applicable.

5 Procedure

The Forensic Anthropological Examinations Procedure will be followed. The assessment of medicolegal significance refers to determining whether remains are of interest to the medicolegal death investigation system (i.e., for identification or determination of cause and manner of death). For anthropological cases, medicolegal significance typically refers to cases that are skeletal in origin, human in origin, and recent in origin. Most jurisdictions do not have a legal or scientific definition for the time period that characterizes remains as medicolegally significant.

Conclusions regarding medicolegal significance are typically based on taphonomic alterations, biocultural factors, the context of the recovery scene, biological profile, and any artifacts associated with the remains. Examples of *non*-medicolegally significant remains include those from archaeological or prehistoric contexts, disturbed cemeteries, anatomical teaching collections, and wartime souvenirs (i.e., “trophy skulls”). It is noted that non-medicolegally significant remains may still be the subject of other criminal investigations and therefore of forensic importance. When conclusions regarding medicolegal significance are unclear, the default assumption will be that they are of medicolegal significance and appropriate procedures will be followed.

Rather than suggesting a specific conclusion, the following features are provided as guidelines for consideration in the assessment of medicolegal significance. For observations leading to a specific conclusion in a case, relevant reference literature will be used and cited. Appropriate reference literature includes relevant studies appearing in peer-reviewed journals or edited volumes and texts. Skeletal reference material includes bones, bone replicas, and bone casts produced or used for the purpose of skeletal examination and comparison.

5.1 Taphonomic Alterations

Taphonomic features relevant to the assessment of medicolegal significance are those that affect the appearance, quality and preservation of remains, including:

- Condition of soft tissue (e.g., present, absent, mummified)
- Bone preservation (e.g., hydrated/greasy, weathered, deteriorated)
- Embalming practices (e.g., procedures, chemicals)
- Features typical of anatomical teaching specimens (e.g., drill holds, hardware, patina)
- Features typical of wartime souvenirs (e.g., paint, inscriptions)

5.2 Biocultural Factors

Biocultural factors refer to skeletal adaptations and modifications that result from practices or activities which can often be associated with particular cultures or time periods. In some cases, assessment of ancestry may also be relevant. Biocultural factors relevant to assessment of medicolegal significance include:

- Occlusal attrition (e.g., as in prehistoric Native Americans)
- Cranial deformation (e.g., as in ancient Peruvian populations)
- Trephination
- Dental restorations
- Surgical devices

5.3 Context and Artifacts

Context and artifacts refer to features and items associated with but not inherent to the skeletal remains. Contextual information and artifacts relevant to the assessment of medicolegal significance include:

- Location of recovery (e.g., surface vs. burial, proximity to known cemeteries)
- Personal effects (e.g., clothing, jewelry, driver's license, currency)
- Coffin materials and hardware
- Stone tools and pottery
- Projectile points
- Burial features (e.g., body position, arrangement)

5.4 Recommendations for Disposition and Further Testing

In cases where remains are determined *not* to be of medicolegal significance, guidance may be provided to the contributor regarding the disposition of the remains. For example, in cases of Native American remains, the contributor should be advised of legislation regarding repatriation of such remains, and/or provided guidance on contacting the state archaeologist.

In some cases, additional testing of remains or artifacts (e.g., radiocarbon dating) may be suggested if more information regarding antiquity is requested.

5.5 Records

5.5.1 Case Notes

Case notes will include any significant observations leading to conclusions regarding medicolegal significance, such as descriptive text, photographs, diagrams, printouts (e.g., FORDISC results), and radiographs. Supporting records and raw data will also be included with the case notes. Reasons for not providing an assessment will be recorded (e.g., insufficient/lack of material present).

5.5.2 Reports

Based on the examination request and the discretion of the examiner, the final FBI *Laboratory Report* (7-1, 7-1 LIMS) will include, where relevant, descriptions of taphonomic alterations, ancestry estimates, and their implications for possible medicolegal significance.

5.5.2.3 *Laboratory Reports* will include a conclusion regarding whether remains are

medicolegally significant. For example: *“The remains are consistent with prehistoric origin and are therefore not of medicolegal significance.”* OR *“The remains cannot be excluded as being of possible medicolegal significance.”*

6 Calculations

Calculations carried out as part of a biological profile will be performed according to appropriate reference data.

Calculations may be carried out in accordance with the prescribed method in the reference literature, or through the use of FORDISC. The source(s) of the formula(e) and calculations used will be recorded in the case notes.

7 Measurement Uncertainty

The measurement uncertainty with calipers is approximately ± 0.02 mm or better, depending on the calipers used. Refer to instrument manuals for uncertainty for a particular caliper. This degree of measurement uncertainty does not significantly affect anthropological conclusions and is not detrimental to the results of anthropological examinations.

8 Limitations

The conclusions that can be reached from anthropological assessments of medicolegal significance are dependent on the condition and completeness of the remains, as well as knowledge of the recovery context and depositional environment. Results based on fragmentary or poorly preserved material or on limited contextual information may be inconclusive.

9 Safety

9.1 While working with physical evidence, Laboratory personnel will wear at least the minimum appropriate protective attire (e.g., laboratory coat, safety glasses, protective gloves).

9.2 Universal precautions will be followed.

9.3 Exposure to biological and radiological hazards may be associated with the examination techniques performed. Safety procedures related to specific instruments or equipment (e.g., wafering saws, X-ray units) will be followed. Refer to the FBI Laboratory Safety Manual for guidance.

10 References

- FBI Laboratory Safety Manual (current version)
- Pokines JT. Taphonomic characteristics of former anatomical teaching specimens received at a Medical Examiner's office, MA. *Journal of Forensic Identification* 2015;65:173-195.
- Sledzik PS, Ousley S. Analysis of six Vietnamese trophy skulls. *Journal of Forensic Sciences* 1991;36(2):520-530.
- Scientific Working Group for Forensic Anthropology guidelines for Determination of Medicolegal Significance (current version).
- Forensic Anthropological Examinations, Trace Evidence Procedures Manual (current version)

Rev. #	Issue Date	History
0	02/07/2018	Original issue.
1	02/10/2020	Changed 'forensic anthropologist' to 'Anthropology Examiner' in Scope and 'examiner' throughout. Removed 'Sample Selection' from Section 4 title. Updated fordisc to FORDISC throughout for consistency. Updated wartime souvenirs example in Section 5.1.

Approval

Redacted - Signatures on File

Trace Evidence Unit
Chief

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Anthropology Technical
Leader

Date: 02/07/2020